

ABSTRACT OF THE DISCLOSURE

In a diffraction grating element 10, between a first medium 11 and a fourth medium 14, a second medium 12 and a third medium 13 are disposed alternately to form a diffraction grating. The light, which enters the diffraction grating from the first medium 11, is diffracted at the diffraction grating portion and output to a fourth medium 14. Or, the light, which enters the diffraction grating from the fourth medium 14, is diffracted at the diffraction grating portion and output to the first medium 11. The index of refraction  $n_1$ - $n_4$  of each medium satisfies a relational expression of " $n_3 < n_1 < n_2$ ,  $n_3 \leq n_4 \leq n_2$ " or " $n_3 \leq n_1 \leq n_2$ ,  $n_3 < n_4 < n_2$ ".